Nevada Site Specific Advisory Board
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Full Board Meeting Handouts for
Wednesday, June 21, 2017

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NSSAB MEETING ATTENDANCE

Full Board Meetings

October 2016 through September 2017 (FY 2017)

Name	11/9/16	1/18/17	3/15/17	4/19/17	6/21/17	8/16/17	9/20/17	Max Terms
MEMBERS								
Michael Anderson	E	√	E	√	E			2020
Amina Anderson	√	√	√	E				2020
Arcadio Bolanos	√	E	E	√				2022
Francis Bonesteel	√	√	√	√				2022
Michael D'Alessio	√	E	√	E	E			2020
Pennie Edmond	√	√	√	√				2020
Karen Eastman	√	√	√	√				2022
Raymond Elgin	√	√	U	√				2022
Charles Fullen	√	√	√	√	E	E		2022
Richard Gardner	√	√	√	√				2022
Donald Neill	√	√	E	√				2020
Autumn Pietras	√	√	√	E				2022
Edward Rosemark	√	√	√	√				2018
Steve Rosenbaum	√	√	√	√				2020
William Sears	√	√	√	√				2018
Cecilia Flores Snyder	E	√	E	√				2020
Richard Stephans	√	√	√	√		E		2022
Jack Sypolt	√	√	E	√				2018
Richard Twiddy	√	√	√	√				2022
Dina Williamson-Erdag	E	√	E	√				2022
LIAISONS								
Clark County	√	√	√	√				
Consolidated Group of Tribes & Organizations	E	√	√	E				
Esmeralda County Commission	E	√	U	E				
Nye County Commission	U	U	U	U				
Nye County Emergency Management	E	E	E	√				
Nye Co. Nuclear Waste Repository Project Office	√	√	√	√				
State of NV Division of Env Protection	√	√	√	√				
U.S. Natl Park Service	E	E	√	E				
White Pine County Commission				E				

KEY: √ - Present E - Excused V - Vacant U - Unexcused

Groundwater Communication Activities
Work Plan Item 7

Kelly Snyder, Deputy Designated Federal Officer
U.S. Department of Energy (DOE)
Nevada Site Specific Advisory Board (NSSAB)
June 21, 2017

NSSAB Work Plan Item #7

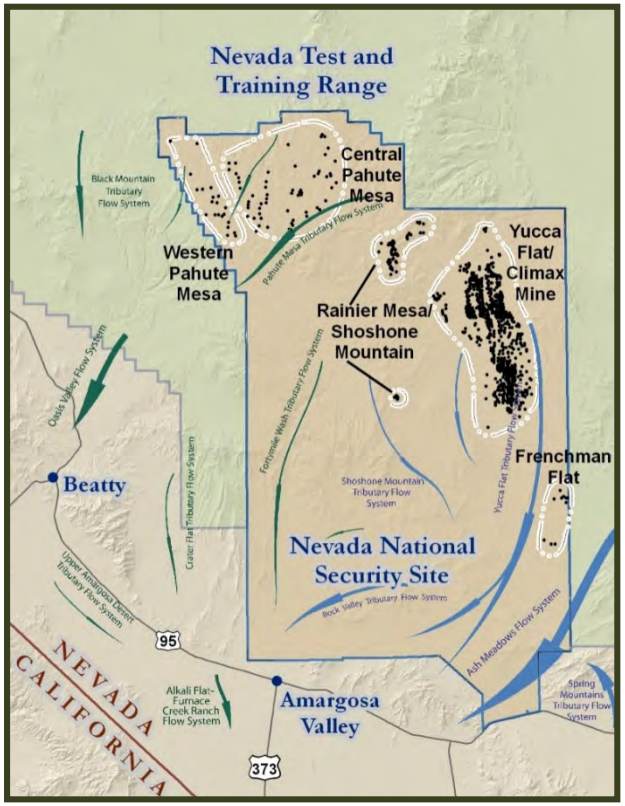
- NSSAB to provide a recommendation, from a community perspective, if additional communication tools should be developed to help communicate groundwater-related topics to the general public
- Things to consider
  - What level of interest does the public have?
  - Are there gaps in the current communication tools (format, types of information, locations, etc.)?
  - Funding used to develop and maintain communication tools is the same funding used for technical analysis and field activities

Briefing Outline

- Background
- Existing Communication Activities
- Community Environmental Monitoring Program
- Groundwater Interactive Maps

Historic Nuclear Testing Impacts on the Groundwater

- 828 underground nuclear tests conducted at the Nevada National Security Site (NNSS) from 1951 to 1992
- Underground tests conducted at depths ranging from approximately 90 to 4,800 feet below the ground surface
- One-third of these tests occurred near, below, or in the water table
- Some radioactive contamination detected in groundwater on the NNSS and the Nevada Test and Training Range (NTTR)



Black dots represent underground nuclear tests

What Needs to be Communicated to the Public?

- Public water supply is safe from the impacts of historic underground nuclear testing
  - Current research shows contaminated groundwater exceeding Safe Drinking Water Act standards is not expected to reach public water supplies
- The science continues
  - As part of a long-term monitoring program, ongoing scientific studies will continue into the future to identify where contaminated groundwater is located, in which direction it flows, and its rate of movement

Long-term Groundwater Communication Strategy

- Over the next decade groundwater corrective action units will be transitioned from active research/modeling to long-term monitoring
- When areas are transitioned to long-term monitoring, communication with the public will be increased to ensure awareness
  - DOE anticipates additional communication will be needed when the Pahute Mesa area is transitioned to long-term monitoring

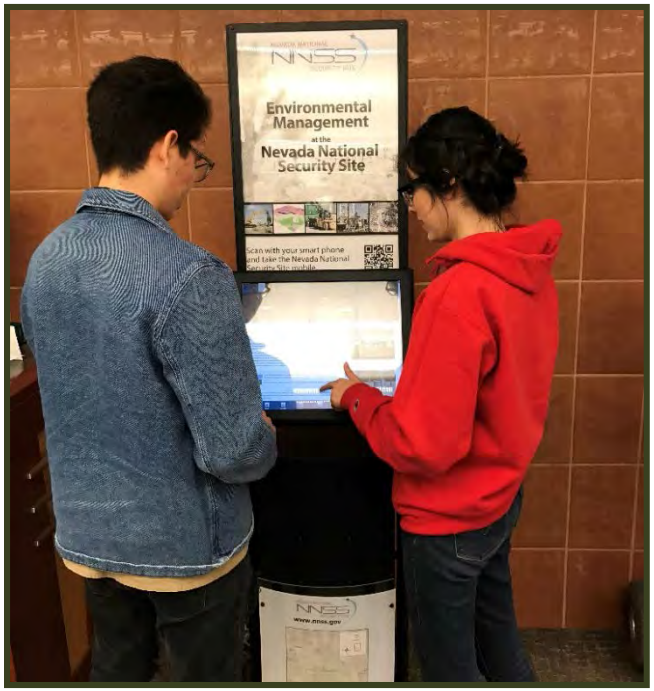
Existing Groundwater Communication Activities

Marc Klein, Navarro Strategic Communications

Groundwater Animation

- https://www.youtube.com/watch?v=wJG-S0rMcms
- Resulted from an NSSAB recommendation
- Viewed more than 600 times on YouTube
- Cost nearly $20,000

Kiosks



- Interactive, touch-screen kiosks (2)
  - Hosted by communities throughout Nevada
    - Currently at Public Reading Room in the Frank H. Rogers Science and Technology Building and UNLV Lied Library
    - Past locations include the Central Nevada Museum in Tonopah; Beatty Museum; and Amargosa Valley, Indian Springs, Las Vegas, Henderson and Pahrump libraries
  - Nevada Field Office internet and social media websites
  - Related government websites
  - NNSS remediation sites map
  - Initial cost more than $16,000, plus annual costs for software maintenance agreement, technology updates, and moving to different locations

Open Houses

- Environmental Management (EM) Nevada Program hosts periodic Groundwater Open House events with posters, discussions, demonstrations, status and handouts
  - Gain community perspectives on specific issues or the release of documents/information
  - Held in both Beatty and Amargosa Valley
  - Average number of attendees is 31 per event (since 2012)
  - Costs ~$70,000 in labor and ~$3,000 in materials/postage

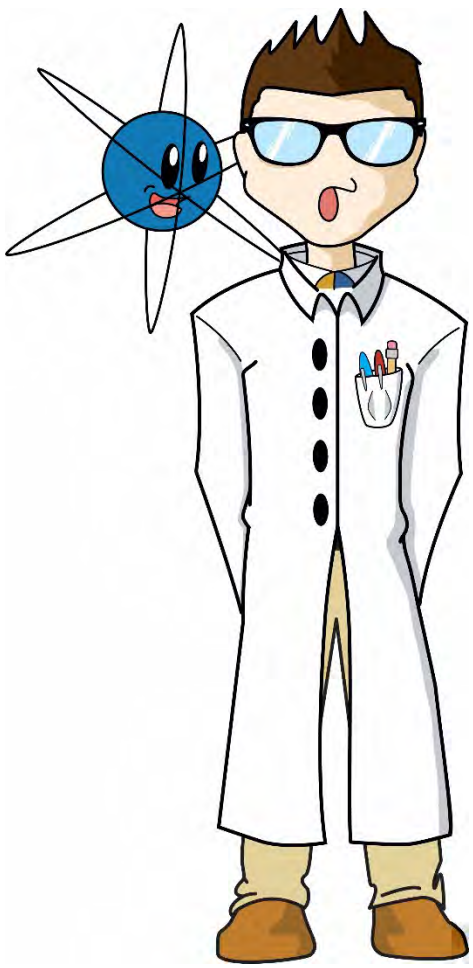
EM Groundwater-focused Tours

- Public signups collected at groundwater open houses
- NSSAB annual work plan tours include groundwater briefings
- Agenda stops typically include groundwater corrective action locations, core library, well drill sites, etc.
- Average number of public attendees in 2016 was 19
- Cost ~$6,500/tour

School Visits

- "Ant farm" groundwater demonstrations
  - Cross-section model shows how subsurface conditions affect water movement
  - 5-10 demonstrations per year
  - Cost ~$2,500/visit

Operation Clean Desert



- Student activity book, teacher's guide and interactive computer game geared toward educating 6th and 8th grade students – "Reaching tomorrow's stakeholders today"
  - Contains a groundwater-specific section
  - Reaches multiple audiences (students bring the books home to their parents and siblings)
  - Received award from U.S. Environmental Protection Agency
  - More than 37,000 distributed since 2007
  - Cost ~$5,000/year (~$1/book)

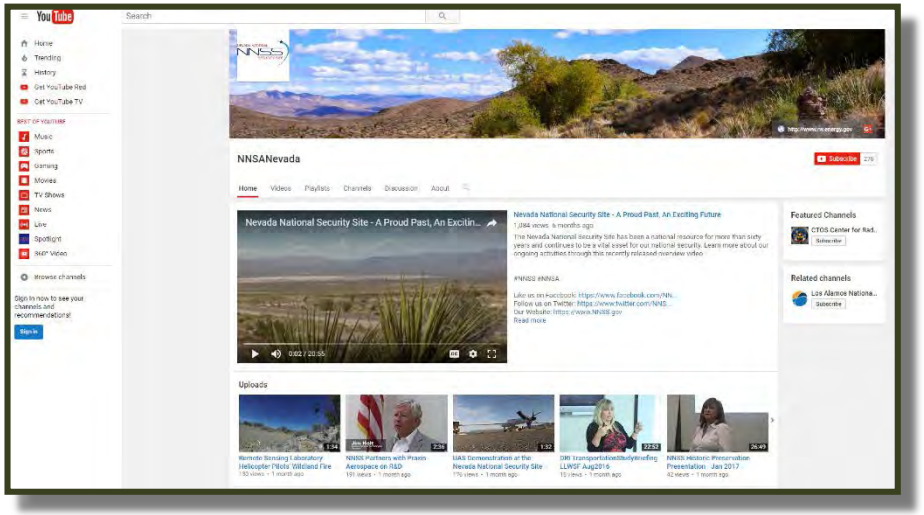
Social Media

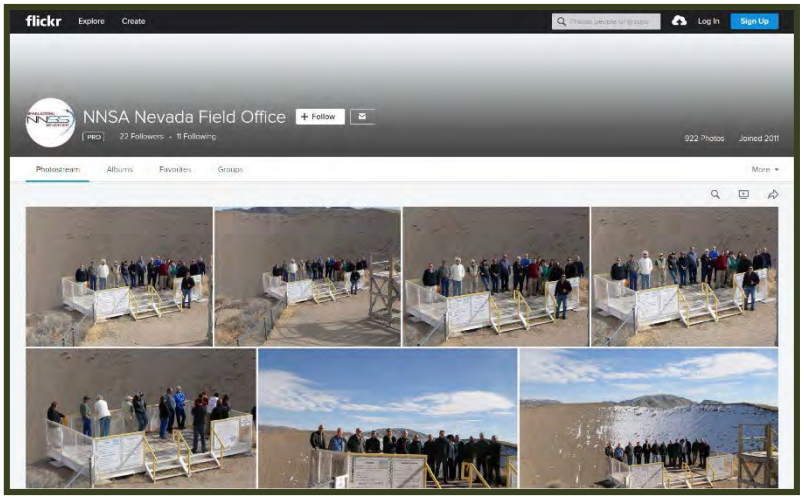
- Facebook – 2,918 likes https://www.facebook.com/NNSANevada/

- Twitter – 585 followers https://twitter.com/NNSANevada

Social Media
(continued)

- YouTube – 277 subscribers, 176 videos, and 120,906 views https://www.youtube.com/user/NNSANevada





- Flickr – 22 followers and 922 photos https://www.flickr.com/photos/nnsanevadasiteoffice

March 10, 2017

U.S. Department of Energy Nevada Field Office

EM NEWS FLASH

Progress Made at the NNSS Yucca Flat/Climax Mine Groundwater Characterization Area

The Nevada National Security Site (NNSS) groundwater characterization team is off to a running start in 2017. NNSS scientists are making progress in their goal of transitioning all groundwater characterization areas to long-term monitoring according to the strategy outlined by the Federal Facilities Agreement and Consent Order (FFACO) and overseen by the State of Nevada Division of Environmental Protection (NDEP). In January, the Yucca Flat/Climax Mine groundwater area of the NNSS received approval from NDEP to move into the next phase of the regulatory strategy, bringing the area one step closer to this goal.

Decades of extensive monitoring and scientific study has shown that groundwater contaminated by historic underground nuclear testing at the NNSS is not a health risk to nearby communities or the public water supply. NNSS scientists use a broad spectrum of information gained through analysis of geologic and groundwater samples to understand the extent of contamination and to ensure public safety for generations to come.

At the Yucca Flat/Climax Mine groundwater characterization area (referred to as a Corrective Action Unit in the FFACO document), NNSS scientists have spent more than two decades characterizing the effects of 747 underground nuclear detonations on the area's groundwater. Since groundwater characterization studies of the area began, more than 30 sampling wells were drilled, developed, and tested, with three new wells drilled in 2016. Scientists use this data, along with data generated from hundreds of other wells drilled during nuclear testing activities, to develop 3-D models of the complex subsurface and groundwater flow system thousands of feet below ground. The computer models are NNSS scientists' key to gaining insight of the subsurface environment and contaminant migration within groundwater.

Models of the Yucca Flat/Climax Mine subsurface are nearing completion, and a scientists now have a clear picture of the area's geology and groundwater system. They have begun work to test and refine the models in order to produce the most accurate results possible.

These efforts led to a successful peer review of the computer models and approval from NDEP to progress to the third phase of the FFACO strategy, called the Corrective Action Decision Document/Corrective Action Plan or CADD/CAP phase within the document. In this phase, monitoring is ongoing as models are refined and a plan for routine, long-term monitoring is developed.

Bill Wilborn (left) and Christine Andres (second from left) discuss the FFACO strategy decision tree during a January 2017 meeting of the Nevada Site Specific Advisory Board

Articles

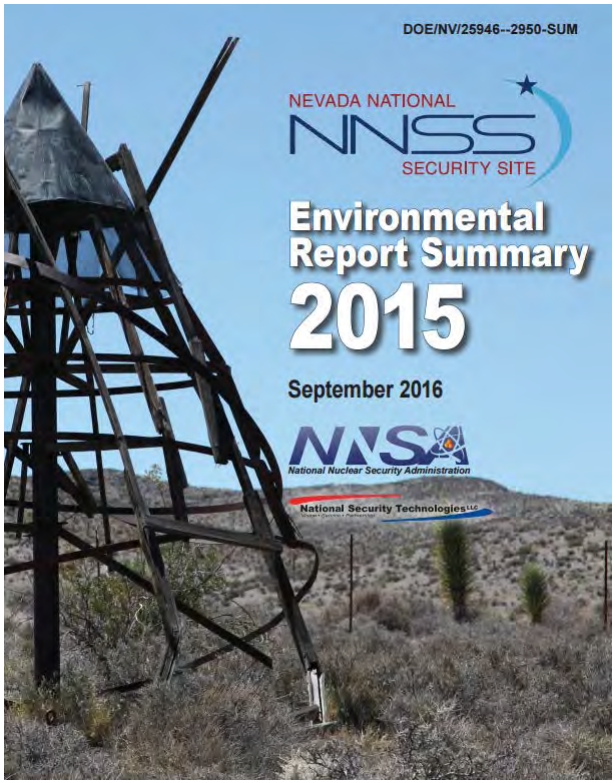
- Published as an EM News Flash and/or in Headquarters' EM Update newsletter
- Distributed via e-mail to over 6,300 NNSS news subscribers (public, employees and media) and published to Nevada Field Office website (www.nnss.gov)
- NSSAB members are automatically subscribed to receive via e-mail

Fact Sheets and Brochures

- Selection on groundwater topics and other EM activities
  - Electronic version
    - Nevada Field Office website (**http://www.nnss.gov/pages/resources/library/FactSheets.html**)
    - EM kiosks
  - Hard copy
    - Public Reading Room (across lobby from National Atomic Testing Museum)
    - Upon request in single or group quantities

NNSS Environmental Report

- Produced annually and publicly available on website at http://www.nnss.gov/pages/resources/library/NNSSER.html
- Includes environmental restoration activities and sampling results of water, air, plants, and animals at NNSS, Tonopah Test Range, and NTTR
  - Entire chapter devoted to groundwater monitoring at the NNSS

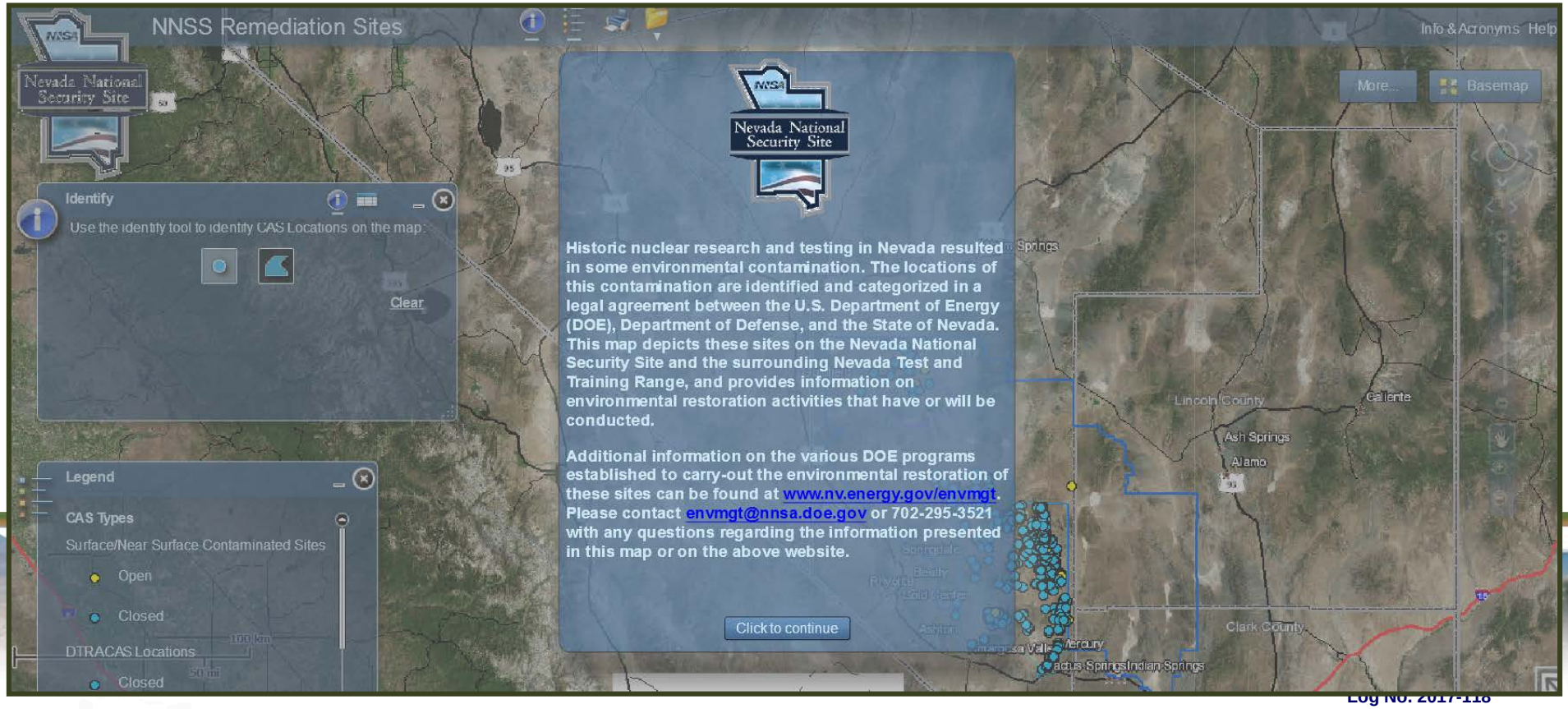


NNSS Remediation Site

- During public comment period for NNSS Site-Wide Environmental Impact Statement, comment was received that it was not necessarily transparent how much remediation progress had taken place at the NNSS
- Some NNSS environmental restoration information available online
- Decision was made to produce an interactive map where remediated sites could be easily differentiated from non-remediated sites
  - Desert Research Institute (DRI) had outward-looking server
  - Navarro had the data
- Associated documents publicly available online at https://www.osti.gov/ (Office of Scientific and Technical Information [OSTI] in Oak Ridge)

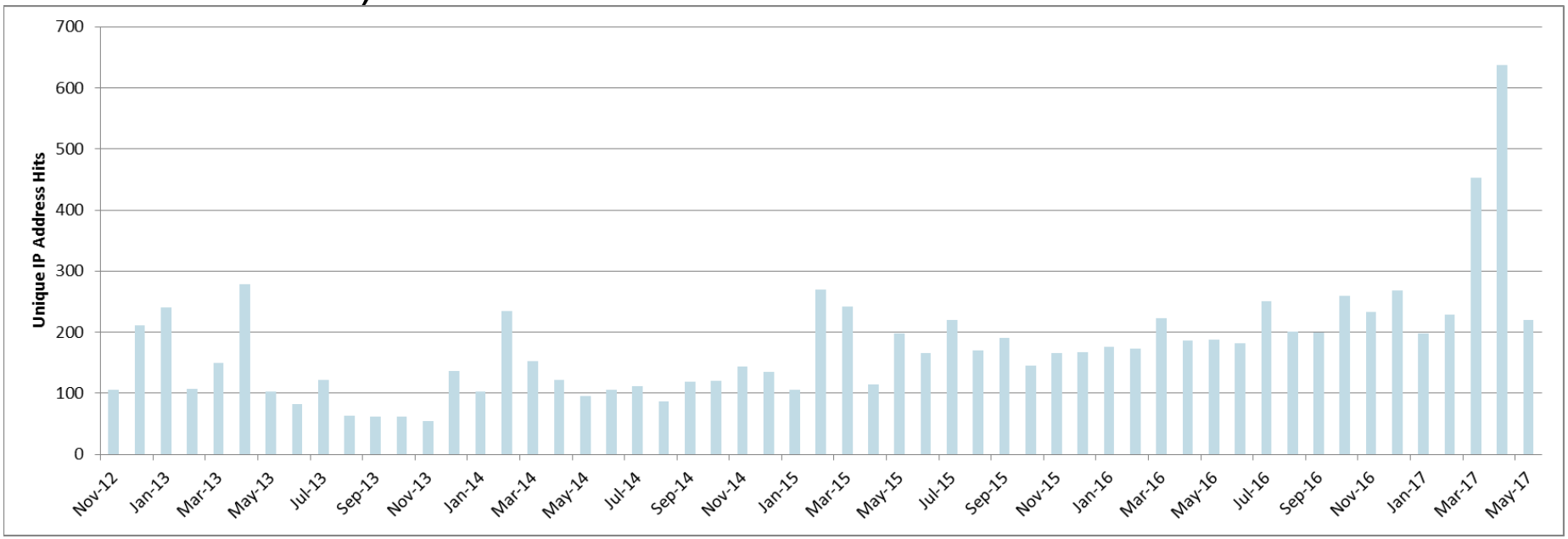
NNSS Remediation Site
(continued)

- DRI and Navarro partnering effort supporting DOE
- Federal Facilities Agreement and Consent Order data and OSTI
- http://nnssremediation.dri.edu/



NNSS Remediation Site
(continued)

- Initial development cost was ~$30,000
- Average cost to maintain website is ~$5,000 per year
- Hits on NNSS Remediation Interactive Map site (unique web addresses)



The Community Environmental Monitoring Program (CEMP)

William "Ted" Hartwell, (DRI)
Program Manager for CEMP

CEMP

- Established in 1981
- Facilitates communication between DOE, National Nuclear Security Administration (NNSA), and the communities surrounding the NNSS
- Increases accessibility to and transparency of monitoring data
- Provides hands-on role for the public in the monitoring process
- Funded by the NNSA Nevada Field Office
- Administered by the DRI of the Nevada System of Higher Education

CEMP
(continued)

- 24 active monitoring stations
- All stations collect information on background radiation and weather
- Water testing for tritium in down-gradient communities (coordination with Nye County on larger sampling program funded by EM grant)
- Employs members of the local communities as Community Environmental Monitors (CEMs) to serve as station managers

The CEMs

Public Outreach

- CEMP website
- CEMP stations
  - Interpretive display
  - Brochures
- CEMs
- Target outreach
  - Schools
  - National Atomic Testing Museum (NATM)
  - Community events
  - Civic organizations

http://cemp.dri.edu/

Public Contacts in 2016

- CEMP website
  - 878,927 unique visits (2,000,000+ days of data downloaded)
- CEMs
  - 2,376 individual contacts
- DRI
  - 411 at NATM tours
  - 297 at local events
  - 2,000+ at LV Science & Technology Festival
  - 100+ email/phone inquiries

Typical Communications and Questions

- Is it safe? (both personal and corporate)
- Requests for presentations
- Requests for data (personal, educational, corporate)
- Requests for interpretation of data
- Data not posting to website/broken links
- Requests to connect to website/post links

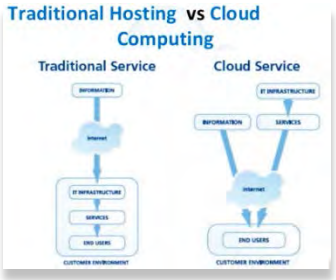
Contact Information for CEMP

- Ted Hartwell – DRI Program Manager for CEMP (702) 862-5419
- Carrie Stewart – NNSA Program Manager for CEMP (702) 295-0077
- Darwin Morgan – NNSA Office of Public Affairs (702) 295-3521
- CEMP Website – http://cemp.dri.edu/

Potential Communication Tools

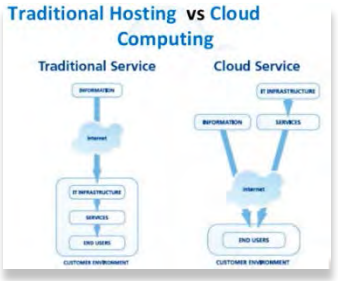
Matt Knop, Navarro Data Management Lead
Tim Minor, DRI Senior Scientist

Evolving Technology



- Mapping/data presentation capabilities evolving
- Original implementation was stand-alone internet server with mirrored data
- Data visualization alternatives were limited
- Applications can now be created on virtual machines and can access information/data from local and web-based resources

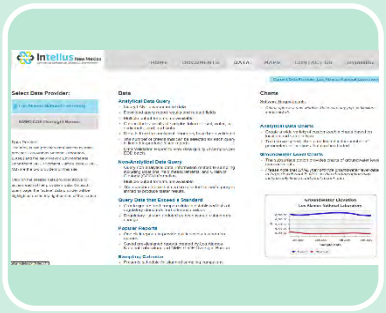
Evolving Technology
(continued)



- Applications and data can be hosted in cloud environments (e.g. Amazon Secure Government Cloud)
- Multi-media support and advanced data/mapping tools can now be used to create visually rich data presentation sites
- Some mapping sites use social media to capture data in real-time

Los Alamos Intellus Site

- Very complex sites that make large volumes of data available through multiple interfaces

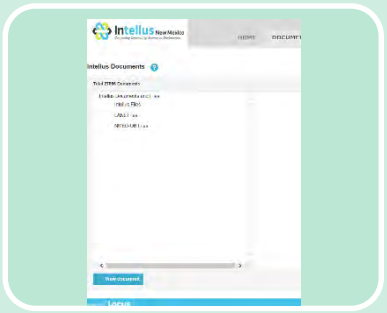


Data

http://www.intellusnmdata.com/reporting/home_reporting.cfm

Maps

http://www.intellusnmdata.com/gis/home_gis.cfm



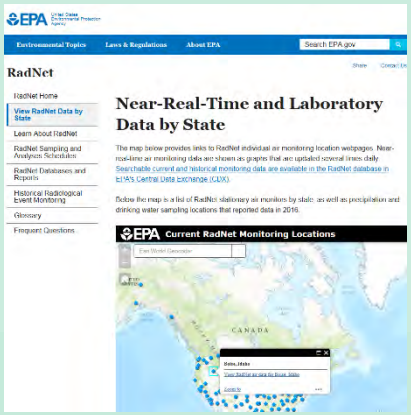
Documents

http://www.intellusnmdata.com/documents/documents.cfm

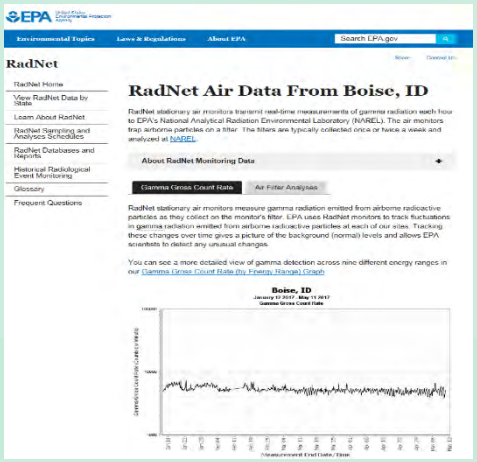
- Great for access to all data but may overwhelm the casual user
- Does not focus on “an” issue so the intended message may be missed
- Initial development cost > $1 million

U.S. Environmental Protection Agency (EPA) Radiological Monitoring Site

- Focuses on a single parameter from many locations



https://www.epa.gov/radnet/near-real-time-and-laboratory-data-state



- Simple to use by a casual user
- Higher probability that the user will understand the intended message
- Initial development cost ~$100,000

EPA Viewpoints Site

- Focuses on a single topic for multiple locations using a multi-media experience
- Can be cloud based (hosted)

https://epa.maps.arcgis.com/apps/Cascade/index.html?appid=e4dbe2263e1f49fb849af1c73a04e2f2

- Engages the casual user
- Offers multiple presentation formats to tell a story
- Initial development cost ~$40,000

Which Format is Best for the NNSS?

- Some sites have multiple issues that are of public concern
- The more parts to the message, the more elaborate the site
- As website complexity increases, risk of obscuring the intended message goes up
- Focus the message on issue of concern
- Use platform that best informs the typical site visitor about the issue

Match the Presentation to the Message

1. Identify stakeholder/typical site user base

2. Identify issue(s) of concern, determine topical focus, and evaluate level of detail required to present information

3. Select best solution to present information on subject of concern

NSSAB Path Forward

- At the August 16, 2017 Full Board meeting provide a recommendation, from a community perspective, if additional communication tools should be developed to help communicate groundwater-related topics to the general public
  - What level of interest does the public have?
  - Are there gaps in the current communication tools (format, types of information, locations, etc.)?
  - Funding used to develop and maintain communication tools is the same funding used for technical analysis and field activities

ENVIRONMENTAL MANAGEMENT SITE-SPECIFIC ADVISORY BOARD

Hanford Idaho Nevada Northern New Mexico

Oak Ridge Paducah Portsmouth Savannah River

Draft Recommendation by EM SSAB Chairs
May 11, 2017

Recommendation: Cleanup Performance Road Map and Communication Strategy

The EM SSAB Chairs have been tasked with the development of a recommendation addressing DOE-EM's need to define communication and performance metrics that better identify project accomplishments, risks and challenges associated with cleanup activities to the public.

DOE-EM should revise metrics so the public can better understand the status of cleanup projects across the complex in the near-term. The intent is to quantify and build transparency into the status of specific projects as they move along the continuum of meeting agreements and legally binding dates for cleanup completion.

DOE-EM should utilize existing resources and simple, visual examples within the Department and other U.S. government agencies (e.g., U.S. Geological Survey, National Oceanic and Atmospheric Administration). DOE-EM should include DOE-EM complex-wide and individual site matrices information and success data.

There needs to be two clearly-described visual road maps:

1) A visual road map that depicts each site's schedule and key milestones
2) A visual road map that depicts DOE-EM's key milestones in totality.

As a complex-wide communication metric, we recommend DOE-EM identify successfully completed projects as benchmarks (e.g., Fernald and Rocky Flats cleanup sites) when developing performance metrics for similar remediation projects. These metrics might help the public to better understand the project lifecycles and the application of performance metrics used to measure successful project completion.

DOE-EM should communicate crucial, high level performance indicators that clearly show if schedules are being compromised. We suggest removing Safeguards and Securities and hotel costs from the budget bundle and giving them their own line items to clearly identify significant costs that are not actual cleanup actions.

DOE-EM should identify key project assumptions and project risks that are crucial to each individual project and the complex-wide schedule. DOE-EM should clearly identifying the challenges acknowledges realities that should be reflected. It can set up a healthy dynamic for DOE-EM to

demonstrate and communicate that it understands and acknowledges the difficulties inherent to these complex cleanup missions.

Advisory boards at each site are tasked with providing project priorities on an annual basis. However, this tool allows stakeholders to see the DOE-EM mission in totality, provides a high-level overview of each project and allows advisory boards to have a more comprehensive view of DOE-EM's work.

ENVIRONMENTAL MANAGEMENT SITE-SPECIFIC ADVISORY BOARD

Hanford Idaho Nevada Northern New Mexico

Oak Ridge Paducah Portsmouth Savannah River

Draft Recommendation by EM SSAB Chairs
May 11, 2017

Recommendation: Above Ground Storage at the Waste Isolation Pilot Project

Background:

A key component to successfully reducing risks to human health and the environment from legacy Transuranic Waste (TRU) located throughout the DOE-EM Complex is the ability to achieve final disposition in the Waste Isolation Pilot Plant (WIPP), located near Carlsbad, New Mexico. With the re-licensing of the WIPP site, we now see the extension of its operation for decades into the future. We champion the potential for expansion of the retrieve/treat/dispose efforts of the TRU program.

In past years, as individual sites queued up for removal, treatment and disposal of their respective TRU inventories, we saw a bottleneck in WIPP operations and TRU remediation efforts due to current capacity limits at WIPP for temporarily staging TRU drums in above ground, surface storage.

Maintenance shutdowns, lack of proximity of DOE-EM sites to the WIPP facility and inclement weather disrupting transportation all have impacted the efficiency of the WIPP program to meet its mandates. Concurrently, at individual sites, we have seen the extension of mortgage costs as sites package and then wait for shipping and disposition. In fact, multiple sites currently have a backlog of drums ready for shipment.

The EM SSAB Chairs believe that DOE's submittal of a modification to its Class 3 Hazardous Waste Disposal Permit with the New Mexico Department (NMED), proposing the construction of an above-ground storage facility at the WIPP site has the potential to be the right answer for addressing the current inefficiencies in operations.

The above ground storage facility proposed by WIPP has the potential to make the TRU waste disposal process more efficient. The permit modification submitted to the NMED contains a quite detailed description of this proposed addition to the WIPP facility. It is a fairly straightforward construction project and there is little reason to doubt, that if constructed to the proposed specifications, it would be capable of temporarily storing a large quantity of TRU waste. However, the permit modification provides no information on the cost of this facility, or the expected benefits to be derived from either in terms of the more efficient operation of the WIPP facility, or the reduction in risk around the DOE complex from the more efficient operations of WIPP and the TRU waste disposal process.

Recommendation:

1) The EM SSAB recommends seeking further efficiencies in the WIPP TRU program in order to streamline, expand and accelerate TRU waste disposition.

2) The EM SSAB recommends that DOE prepare for public review, information on the expected benefits and costs of this proposed addition to the WIPP facility in terms of more efficient operation of WIPP, an overall reduction of risk around the DOE complex from an increased rate of disposal of TRU waste, and the impact of the cost of this facility on other DOE facilities. Allowing nearly a one-year buffer of TRU waste inventory to be safely stored above ground at WIPP for a period of up to one year, seems to makes sense.